

Encyclopedic Entry

levee

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Living near water is a wonderful thing—except when there’s a **flood**. So people build levees. A **levee** is a natural or **artificial** wall that blocks water from going where we don’t want it to go. Levees may be used to increase available land for habitation or divert a body of water so the fertile **soil** of a river or sea bed may be used for agriculture. They prevent rivers from flooding cities in a storm surge. But if a levee breaks, the consequences can be disastrous.

Levees are usually made of **earth**. The natural movement of a body of water pushes **sediment** to the side, creating a natural levee. The banks of a river are often slightly elevated from the **river bed**. The banks form levees made of sediment, **silt**, and other materials pushed aside by the flowing water. Levees are usually **parallel** to the way the river flows, so levees can help direct the flow of the river.

Levees can also be artificially created or reinforced. Artificial levees are usually built by piling soil, **sand**, or rocks on a cleared, level surface. In places where the flow of a river is strong, levees may also be made of blocks of wood, **plastic**, or **metal**. Where the area beside a river or other body of water is in particular danger, levees may even be reinforced by **concrete**.

People have been building and reinforcing levees since the beginning of **civilization**. As early as 2500 BCE, the **Indus Valley Civilization**, with urban centers in what is today Mohenjo Daro and Harappa, Pakistan, used levees to protect land near the Indus River. Farmers were able to grow crops like **cotton** and **rice**.

In addition to creating living space and cropland, levees can also provide a measure of protection from invaders. Levees can make a river like a **moat**, preventing people from easily invading territory on the other side. Destroying levees can also stop invading forces. In 1938, Chinese leaders intentionally broke levees on the Yellow River to prevent the Japanese **military** from advancing. More than 500,000 people, Japanese and Chinese, died in the resulting flood.

Artificial levees need to be protected. They have to stand up to **erosion**, or wearing away, by the nearby water. Sometimes, trees and plants like **Bermuda grass** are planted near levees to **anchor** the soil. Engineers need to **maintain** levees with **structural** work to reinforce the boundaries.

In emergencies, temporary levees can be made of sandbags. These soak up the water and usually prevent **excess** water from seeping past the sand.

Artificial levees prevent flooding. But they also create a new problem: levees squeeze the flow of the river. All the river’s power is flowing through a smaller space. Water levels are higher and water flows faster. This puts more pressure on levees **downstream** and makes the water more difficult to control. If levees break, it also makes containing the flood more difficult.

Since the 18th century, levees have protected Louisiana and other nearby states from flooding by the Mississippi River. When **Hurricane Katrina** struck New Orleans in 2005, the levees could not withstand the storm surge. The levees broke, and water flooded 80 percent of the city.

Levees on the Sea

Although most levees exist to control rivers, they can also exist on the coast. The country of the Netherlands has an **elaborate** system of dikes, levees, and dams to hold back the North Sea. Land for farms, industry, and residential use has been created from land that was once the ocean floor.

The Bay of Fundy, which borders the provinces of New Brunswick and Nova Scotia, Canada, has one of the highest tidal ranges in the world. The **tidal range** reaches more than 17 meters (55 feet) in some places. To make the most use of land that would otherwise be underwater during **high tide**, Canada has constructed levees along parts of the Bay of Fundy.

VOCABULARY

Term	Part of Speech	Definition
anchor	<i>verb</i>	to hold firmly in place.
artificial	<i>adjective</i>	created by people and industry.
bank	<i>noun</i>	a slope of land adjoining a body of water, or a large elevated area of the sea floor.
Bermuda grass	<i>noun</i>	grass with deep roots.
civilization	<i>noun</i>	complex way of life that developed as humans began to develop urban settlements.
concrete	<i>noun</i>	hard building material made from mixing cement with rock and water.
cotton	<i>noun</i>	cloth made from fibers of the cotton plant.
crop	<i>noun</i>	agricultural produce.
dam	<i>noun</i>	structure built across a river or other waterway to control the flow of water.
dike	<i>noun</i>	a barrier, usually a natural or artificial wall used to regulate water levels.
downstream	<i>noun</i>	in the direction of a flow, toward its end.
earth	<i>noun</i>	soil or dirt.
elaborate	<i>adjective</i>	complex and detailed.
elevate	<i>verb</i>	to raise higher than the surrounding area.
engineer	<i>noun</i>	person who plans the building of things, such as structures (construction engineer) or substances (chemical engineer).
erosion	<i>noun</i>	act in which earth is worn away, often by water, wind, or ice.
excess	<i>noun</i>	extra or surplus.
flood	<i>noun</i>	overflow of a body of water onto land.
high tide	<i>noun</i>	water level that has risen as a result of the moon's gravitational pull on the Earth.
Hurricane Katrina	<i>noun</i>	2005 storm that was one of the deadliest in U.S. history.
Indus Valley Civilization	<i>noun</i>	(2500-1500 BCE) civilization that flourished in the Indus River Valley, in present-day Pakistan.
legally protected	<i>adjective</i>	having laws to keep something safe.
levee	<i>noun</i>	bank of a river, raised either naturally or constructed by people.

maintain	<i>verb</i>	to continue, keep up, or support.
metal	<i>noun</i>	category of elements that are usually solid and shiny at room temperature.
military	<i>noun</i>	armed forces.
moat	<i>noun</i>	trench around a castle, filled with water, to prevent or delay attack or invasion.
neighborhood	<i>noun</i>	an area within a larger city or town where people live and interact with one another.
overwork	<i>verb</i>	to demand too much of someone or something.
parallel	<i>adjective</i>	equal distance apart, and never meeting.
plastic	<i>noun</i>	chemical material that can be easily shaped when heated to a high temperature.
province	<i>noun</i>	division of a country larger than a town or county.
result	<i>verb</i>	to end after a series of actions.
rice	<i>noun</i>	grass cultivated for its seeds.
river bed	<i>noun</i>	material at the bottom of a river.
rock	<i>noun</i>	natural substance composed of solid mineral matter.
sand	<i>noun</i>	small, loose grains of disintegrated rocks.
sandbag	<i>noun</i>	bag filled with sand or earth and placed near a river to prevent flooding.
sediment	<i>noun</i>	solid material transported and deposited by water, ice, and wind.
seep	<i>verb</i>	to slowly flow through a border.
silt	<i>noun</i>	small sediment particles.
soil	<i>noun</i>	top layer of the Earth's surface where plants can grow.
structural	<i>adjective</i>	having to do with the frame or support of a construction such as a bridge or building.
tidal range	<i>noun</i>	the difference in height between an area's high tide and low tide.
urban center	<i>noun</i>	densely populated area, usually a city and its surrounding suburbs.
ward	<i>noun</i>	neighborhood or political district in some large cities.

For Further Exploration

Articles & Profiles

- National Geographic Magazine: A City's Faulty Armor

Audio & Video

- National Geographic Channel: Explorer—Drowning New Orleans

Websites

- Levees.org
- FEMA: Living with Levees
- Yellowstone County, Montana: How to Build a Sandbag Levee Or Cap An Existing Levee



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